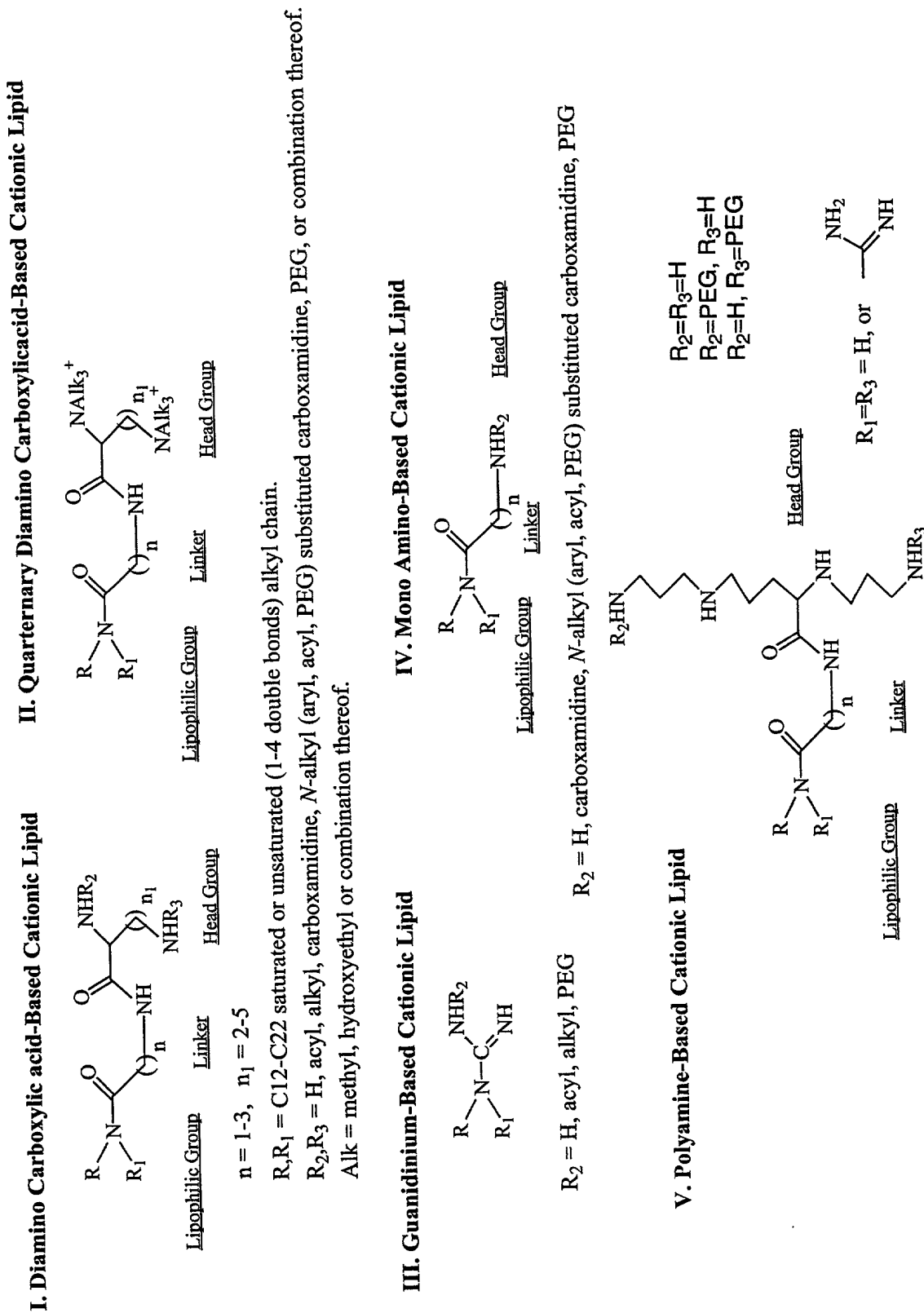
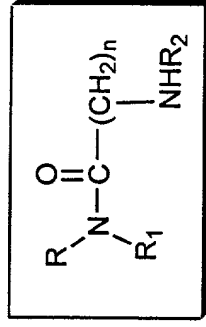


Figure 1A

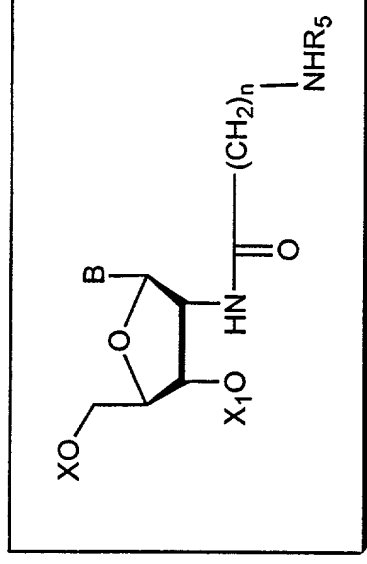


**Figure 1B: Mono Amino-Based Cationic Lipid**

**Class IV**

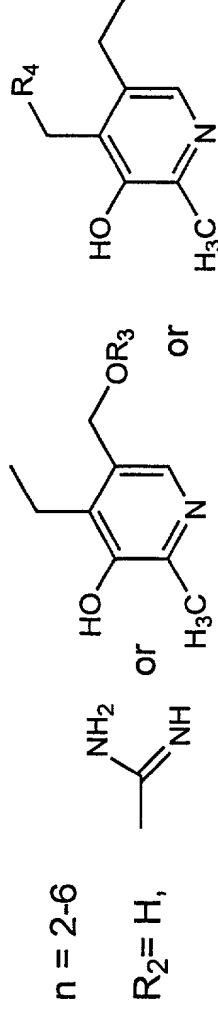


**Class V**



$R, R_1$  = C12-C22 saturated or unsaturated (1-4 double bonds) alkyl chain.

$n = 2-6$



$R_3$  = H,  $PO_3H_2$ , PEG

$R_4$  = OH,  $NH_2$ , =O, O-PEG

$R_5$  = H, carboxamidine

$X = X_1 = R, R_1$

$X = R, X_1 = R_1, X = R_1, X_1 = R$

$X = PEG, X_1 = H$

$X = H, X_1 = PEG$

B = nucleic acid base (modified or unmodified) or H

PEG: or PEG 2000 carbonyl, PEG 5000 carbonyl

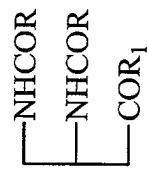
methoxypolyoxyethylene carbonyl  
(Ave. Mol. Wt. = 2000 or 5000)

CO-PEG2000 - amide

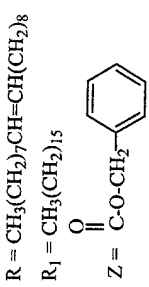
COOPEG - carbamate

**Figure 1C**

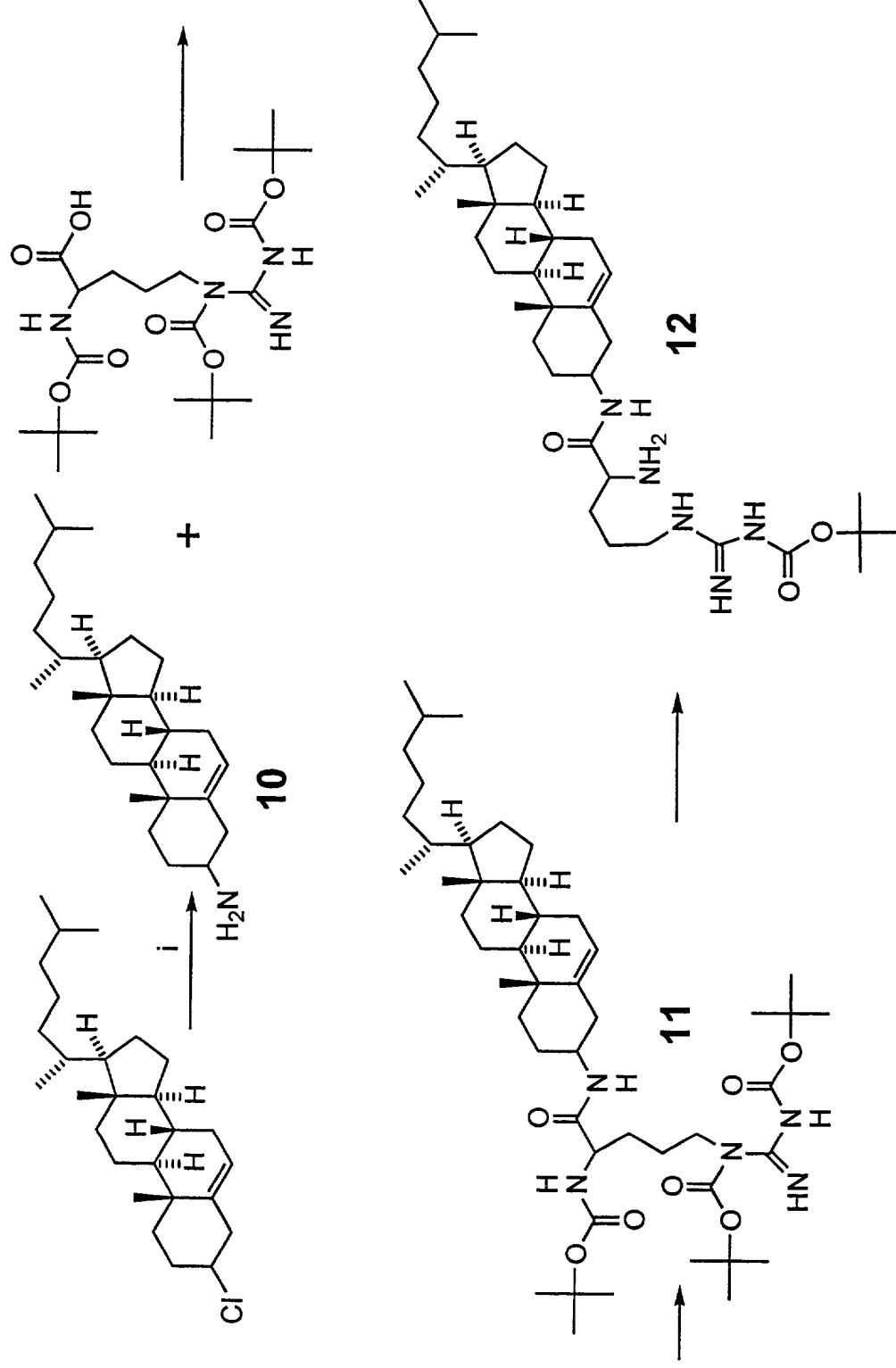
General formula:



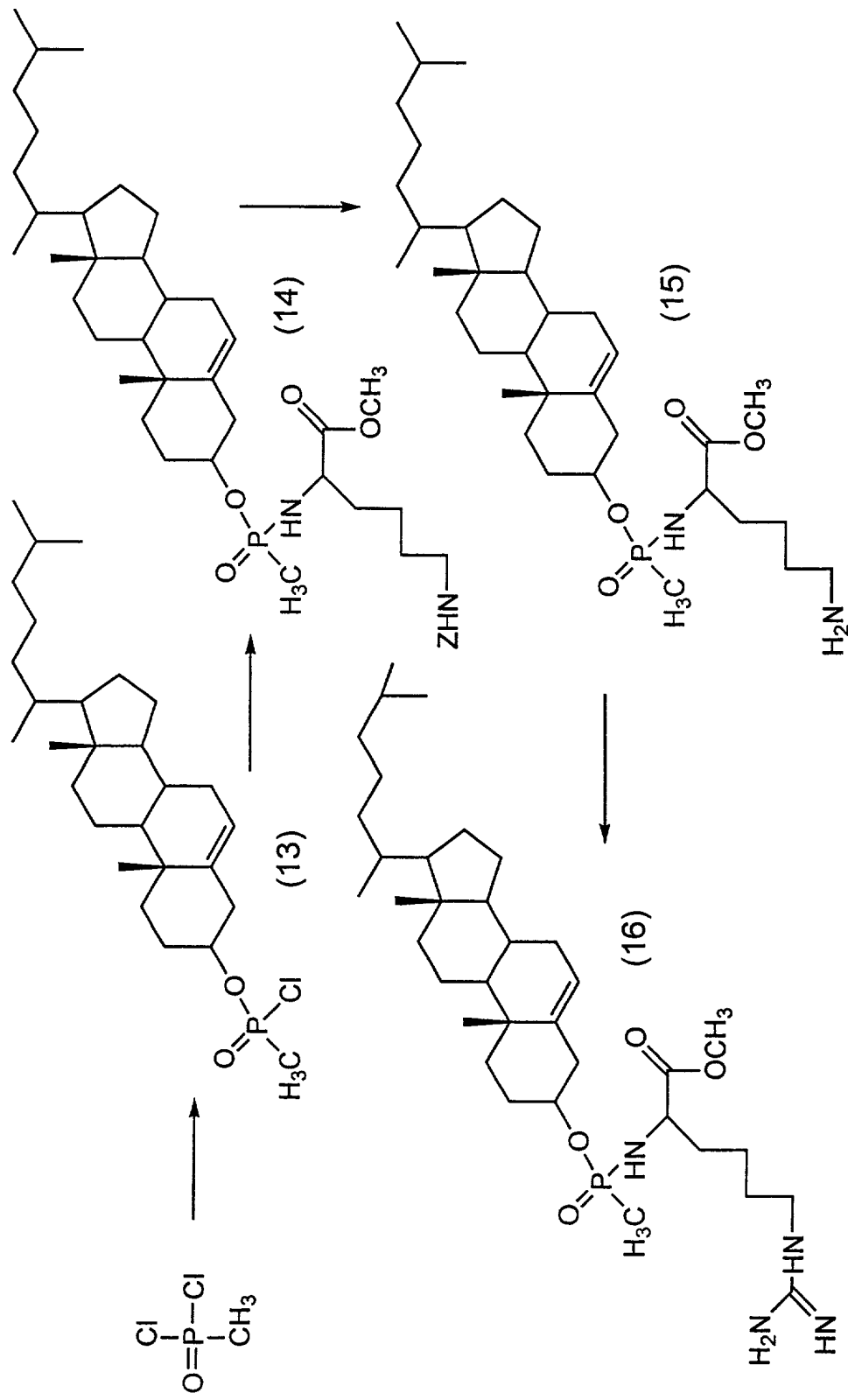
R = saturated or unsaturated (1-4 double bonds) alkyl chains (12-22C)  
 R<sub>1</sub> = TREN, N,N'-di-carboxamidine TREN, lysyl, arginyl, ornithyl,  
 homoarginyl, histidyl, aminopropylimidazole, spermine carboxylic acid.

[illegible]

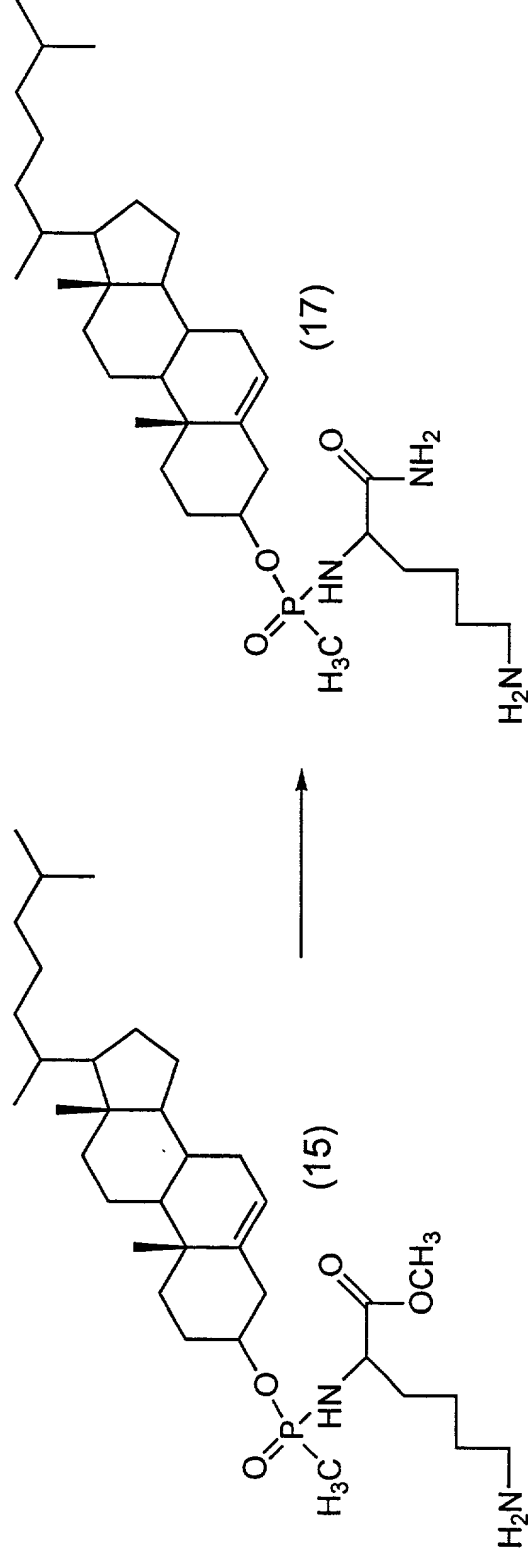
**Figure 3: Synthesis of DS 46596 (12)**



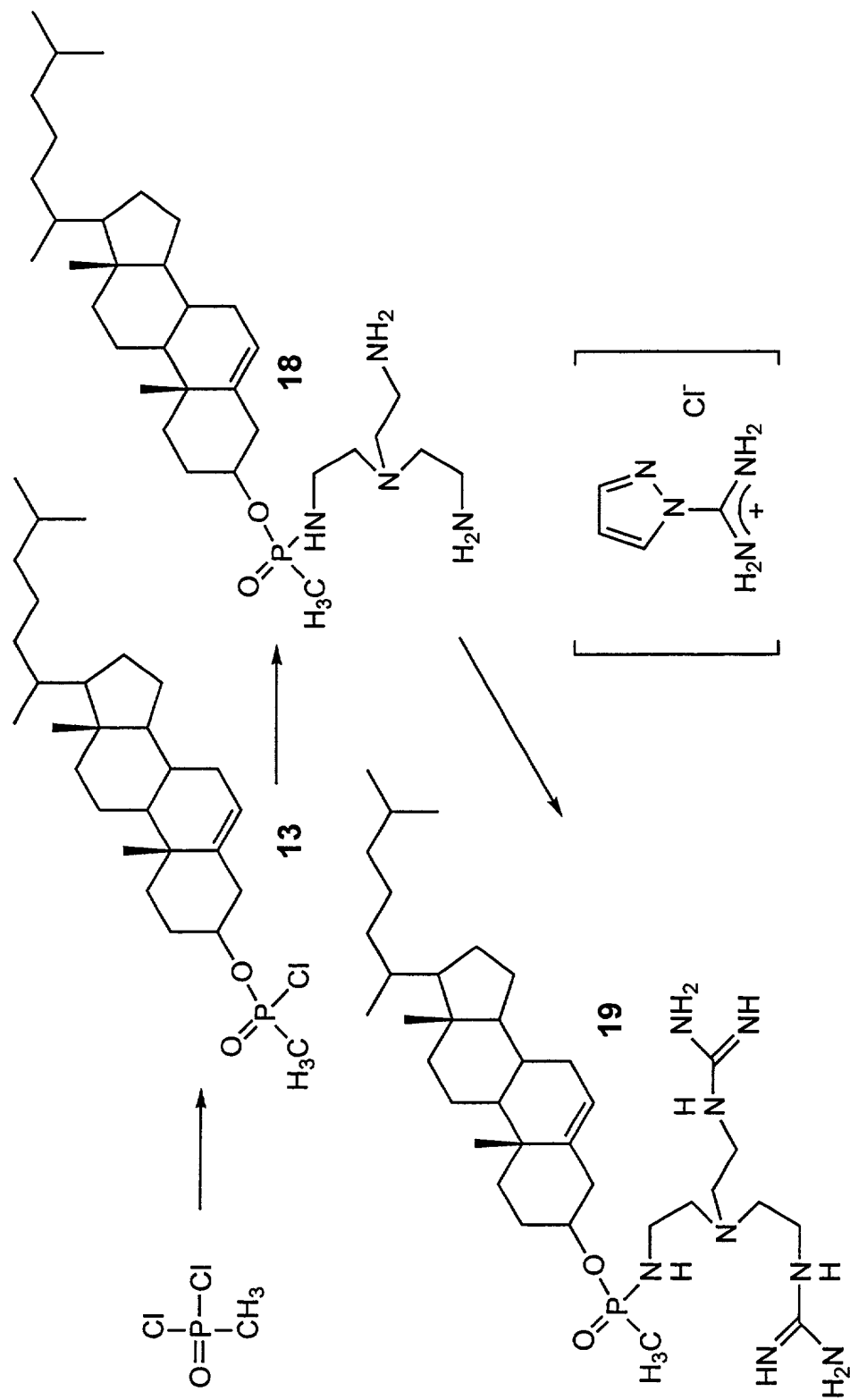
**Figure 4: Synthesis of PH 55933 (15), 55938 (16)**



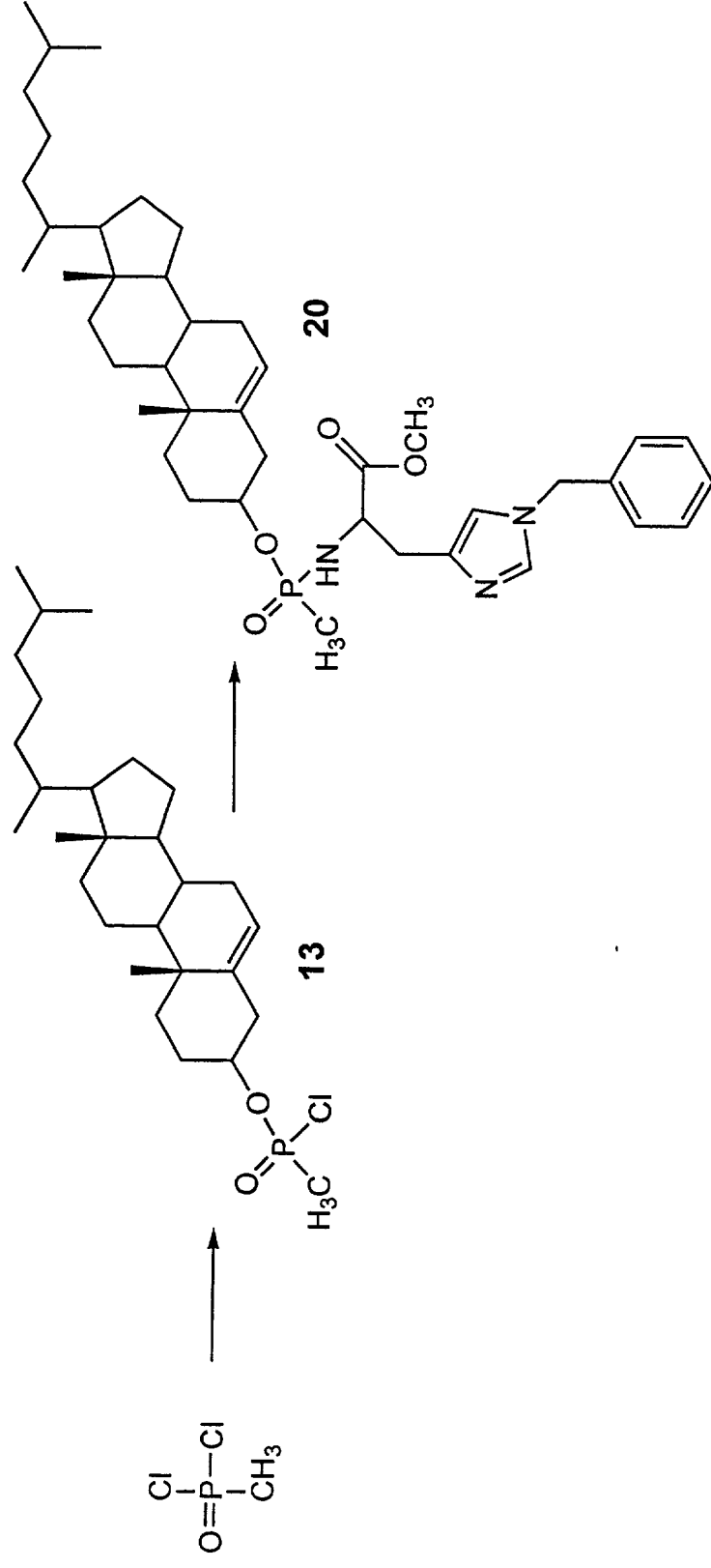
**Figure 5: Synthesis of PH 55939 (17)**



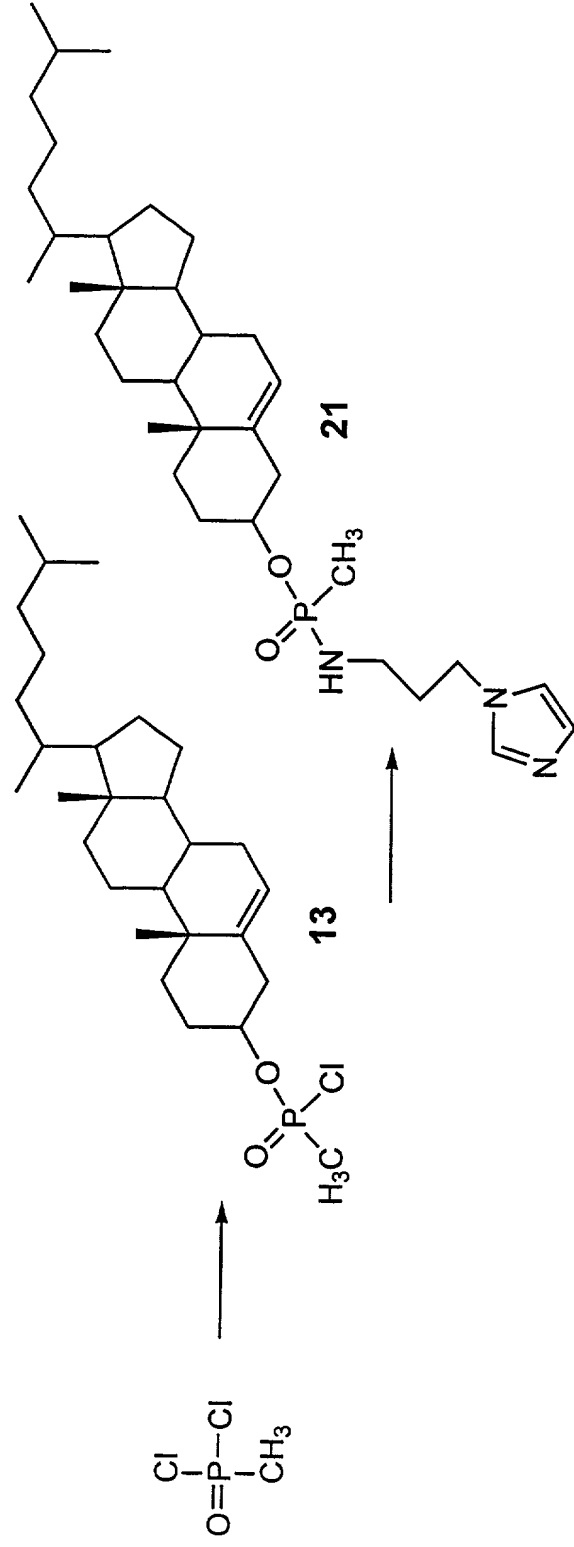
**Figure 6: Synthesis of PH 55941 (18), 55942 (19)**



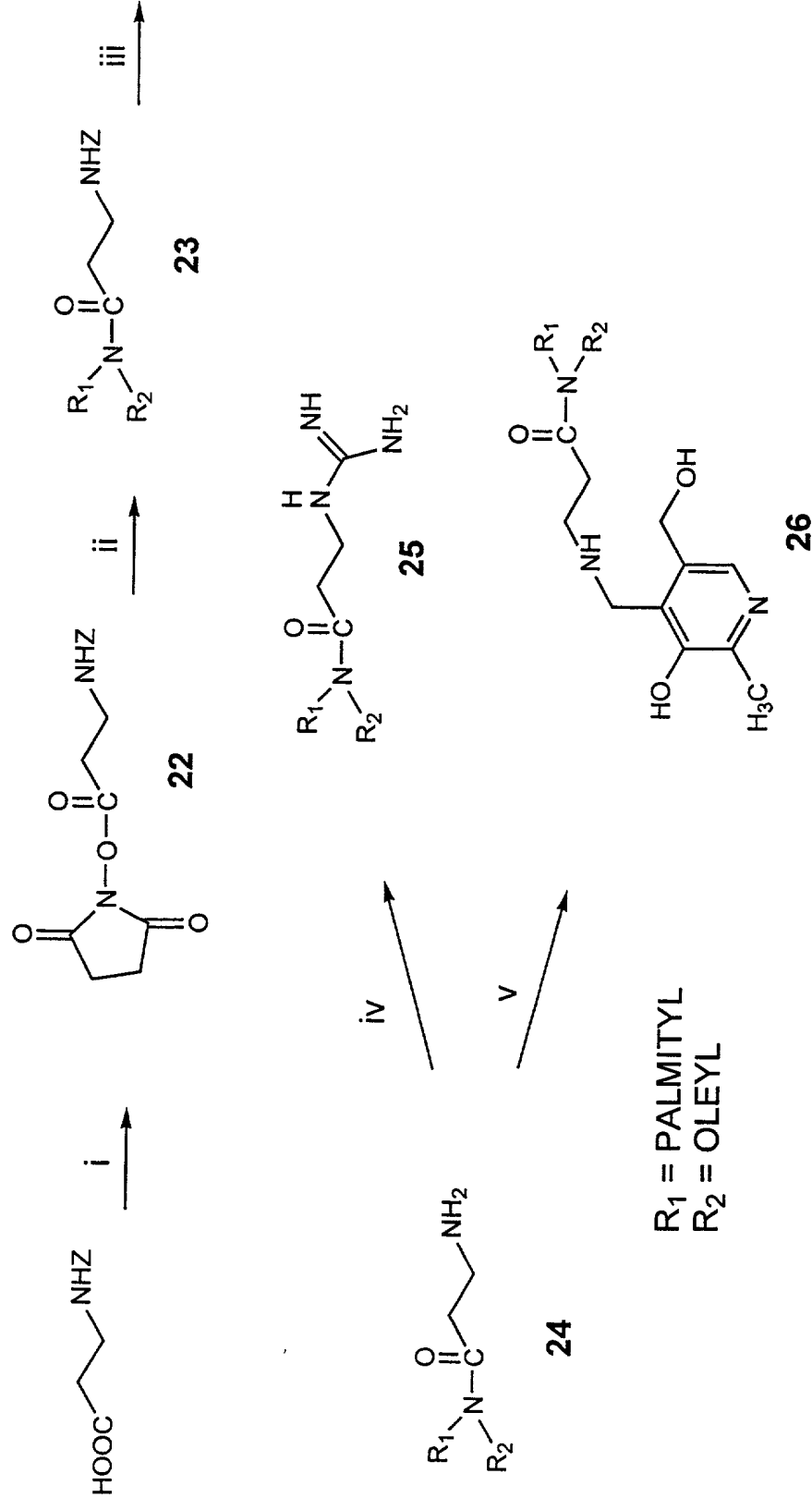
**Figure 7: Synthesis of PH55943 (20)**



**Figure 8: Synthesis of PH 55945 (21)**

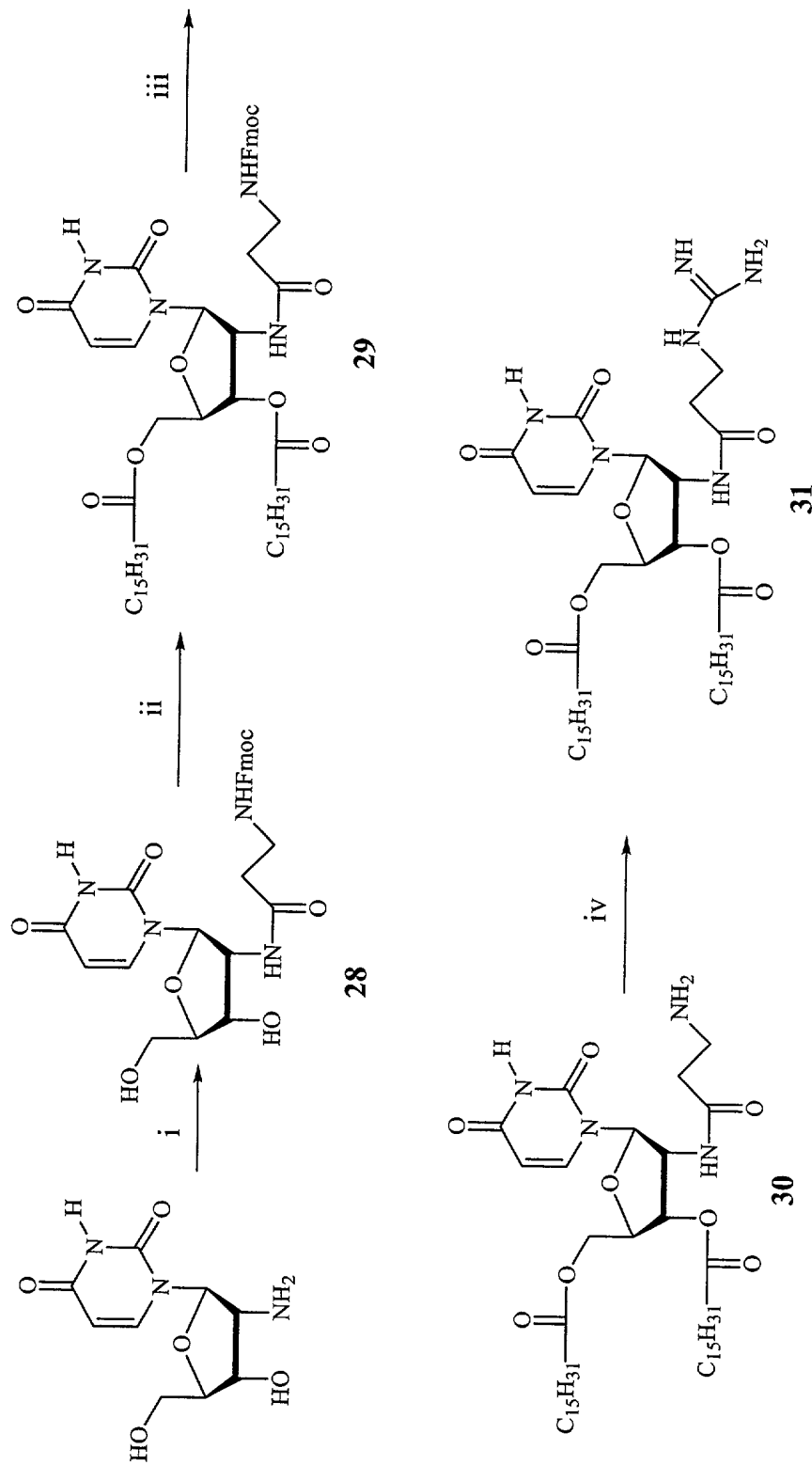


**Figure 9: VITAMIN B<sub>6</sub> and  $\beta$ -Ala-BASED CATIONIC LIPIDS**



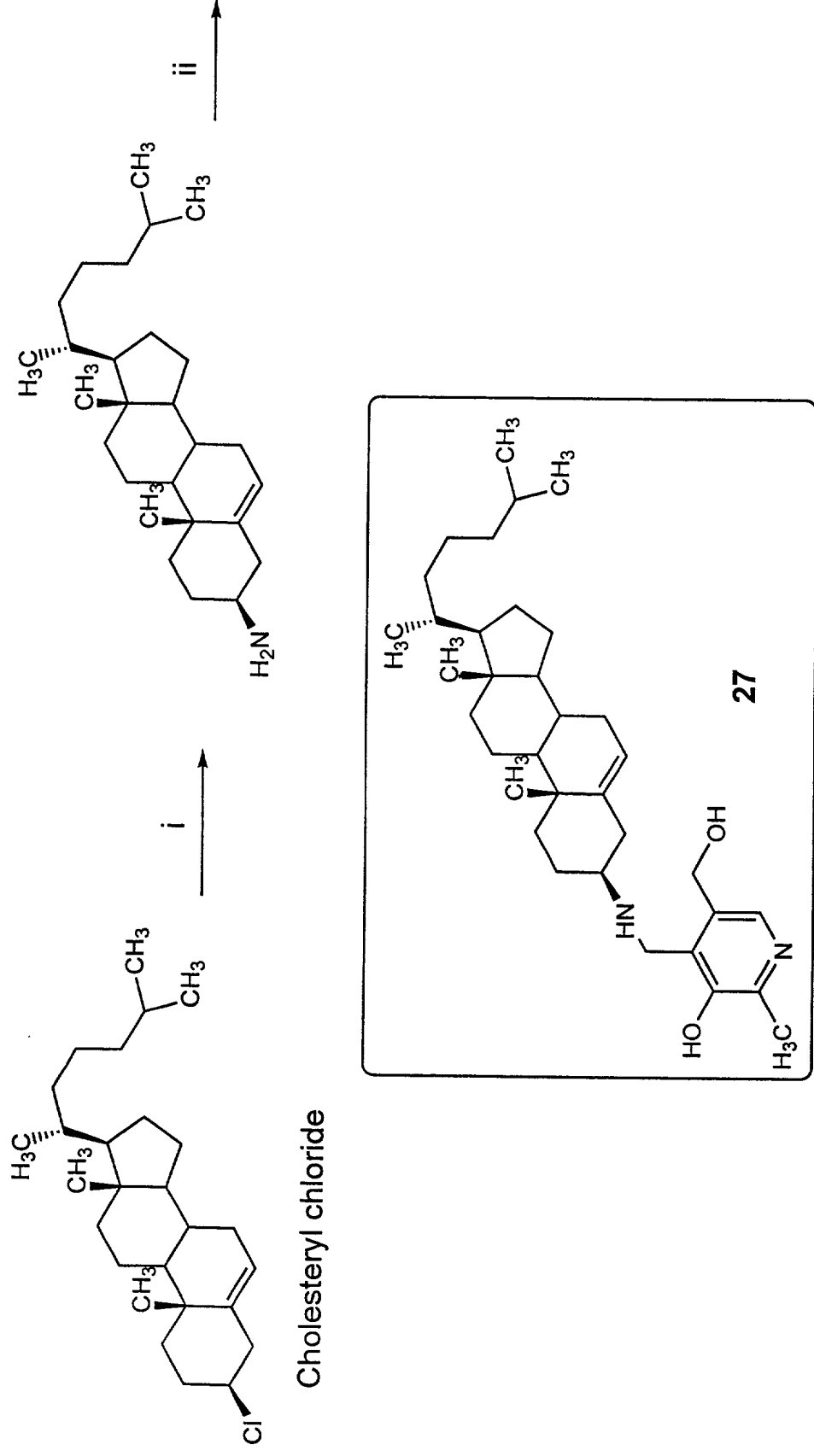
**REAGENTS AND CONDITIONS:** i) N-hydroxysuccinimide, DCC; ii) HNR<sub>2</sub>, Et<sub>3</sub>N; iii) 10% Pd/C, 1,4-cyclohexadiene; iv) a: pyridoxal/EtOH, b: NaBH<sub>4</sub>; v) 1H-pyrazole-1-carboxamide/THF-MeOH

**Figure 10**



**Reagents and conditions:** i) N-Fmoc-b-Ala, EEDQ/MeOH; ii)  $\text{C}_{15}\text{H}_{31}\text{COCl/Py}$ ; iii) morpholine/ $\text{CH}_2\text{Cl}_2$ ; iv) 1H-pyrazole-1-carboxamide/THF-MeOH

**Figure 11: VITAMIN B<sub>6</sub>-CHOLESTEROL CONJUGATE**



**REAGENTS AND CONDITIONS:** i)  $\text{NH}_3/\text{MeOH}$ ; ii) reductive amination of pyridoxal

FIGURE 12A

# Group I Intron

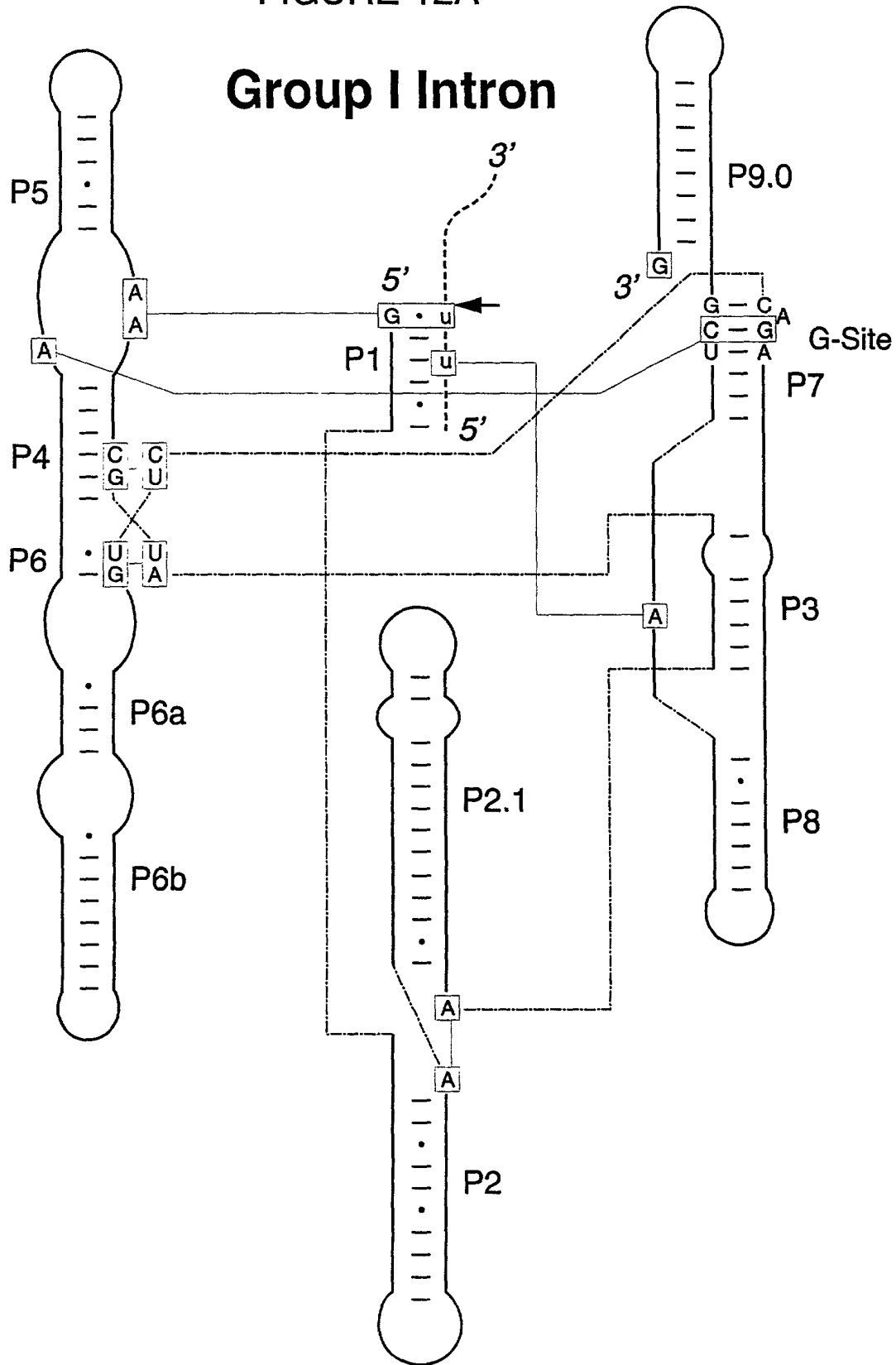


FIGURE 12B

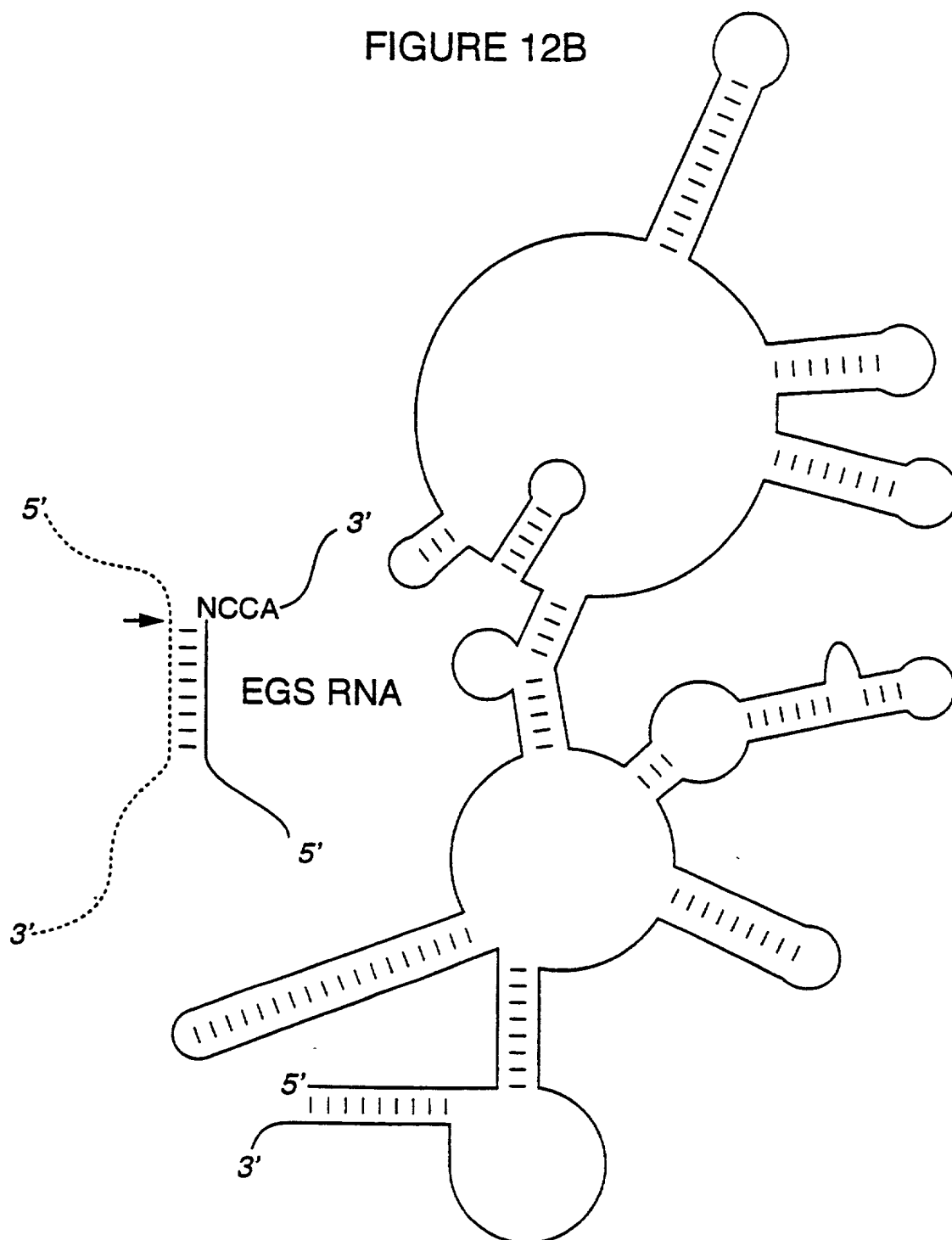


FIGURE 12C

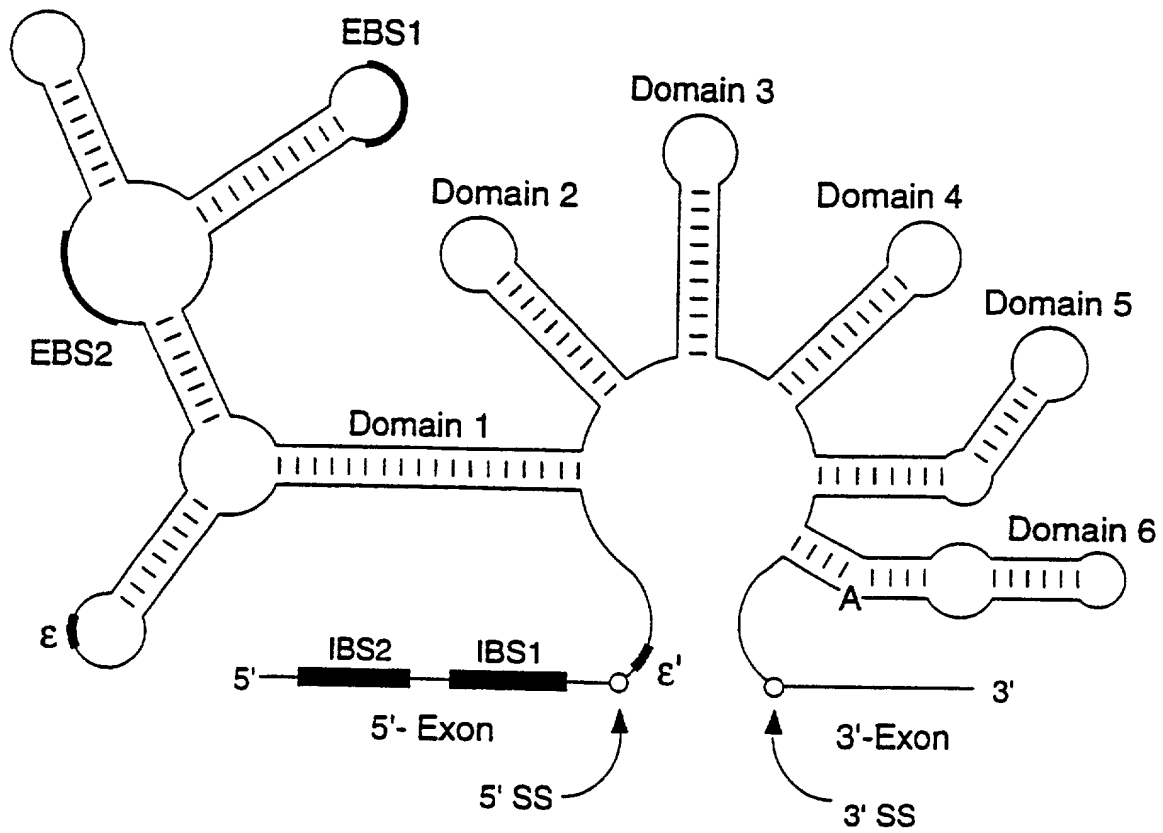


Figure 12D

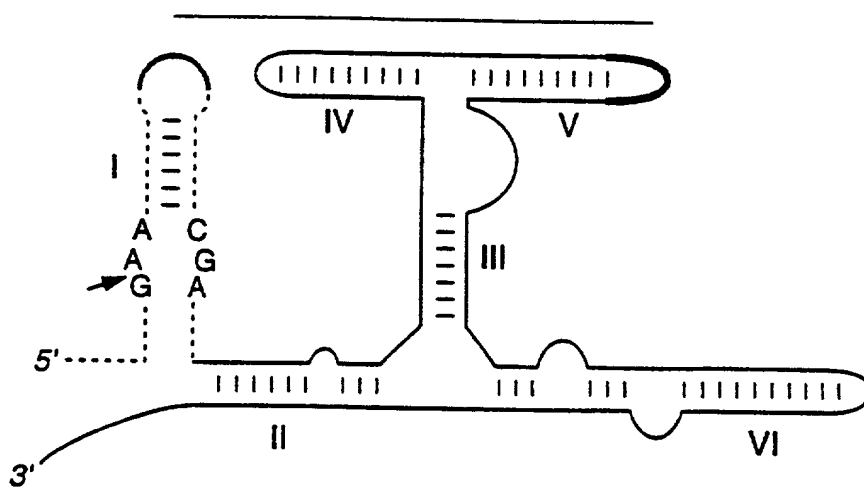


FIGURE 12E

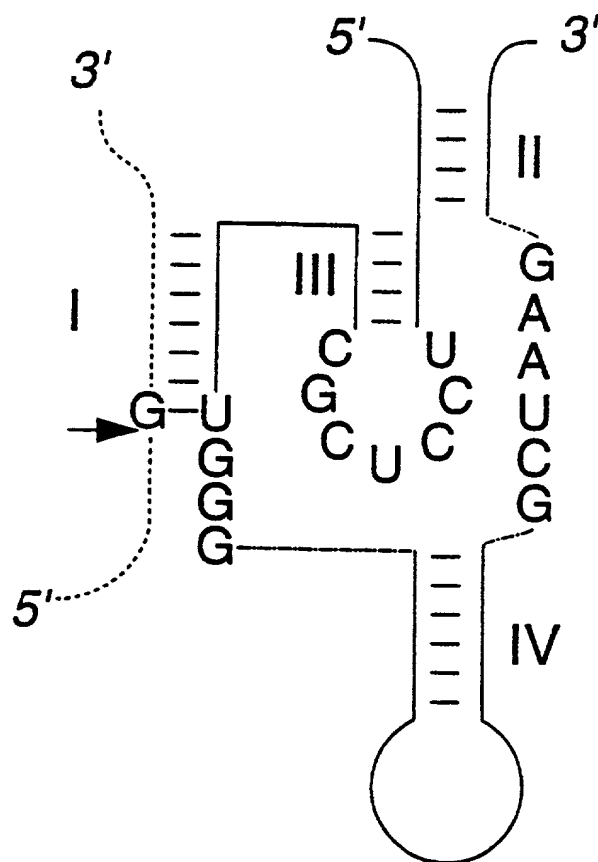


FIGURE 12F

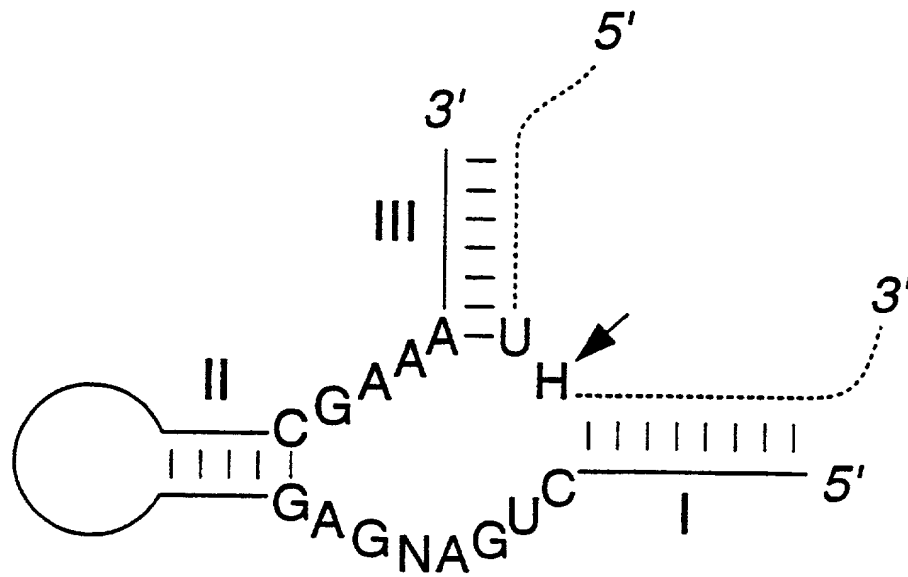
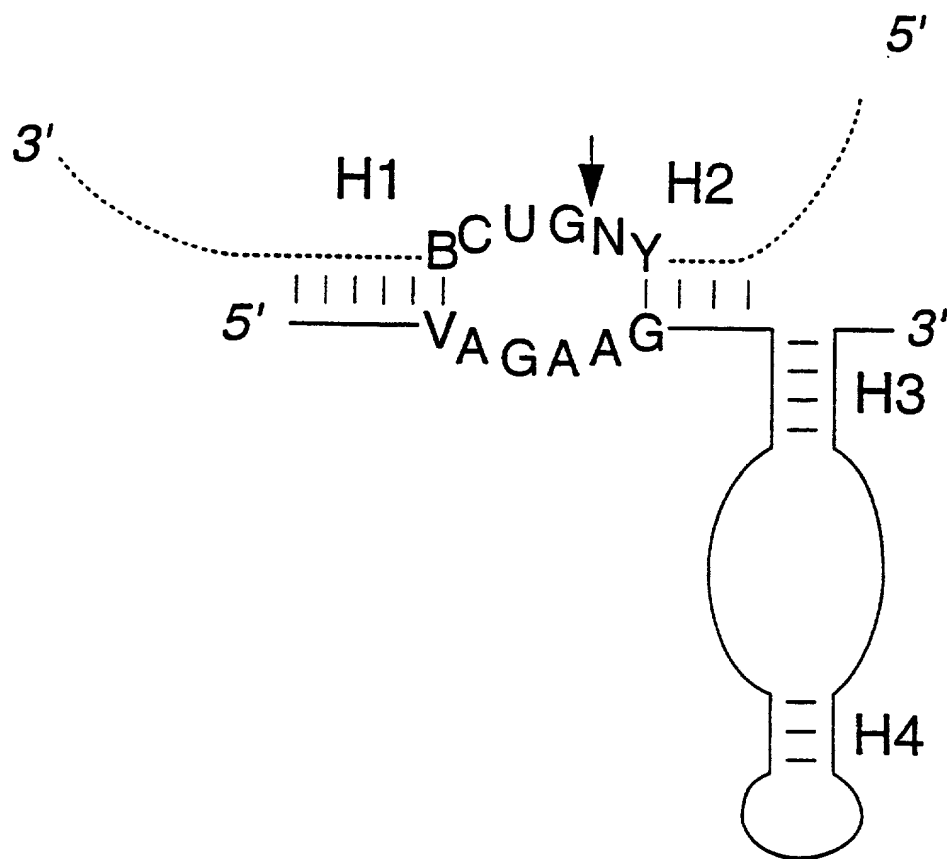


FIGURE 12G



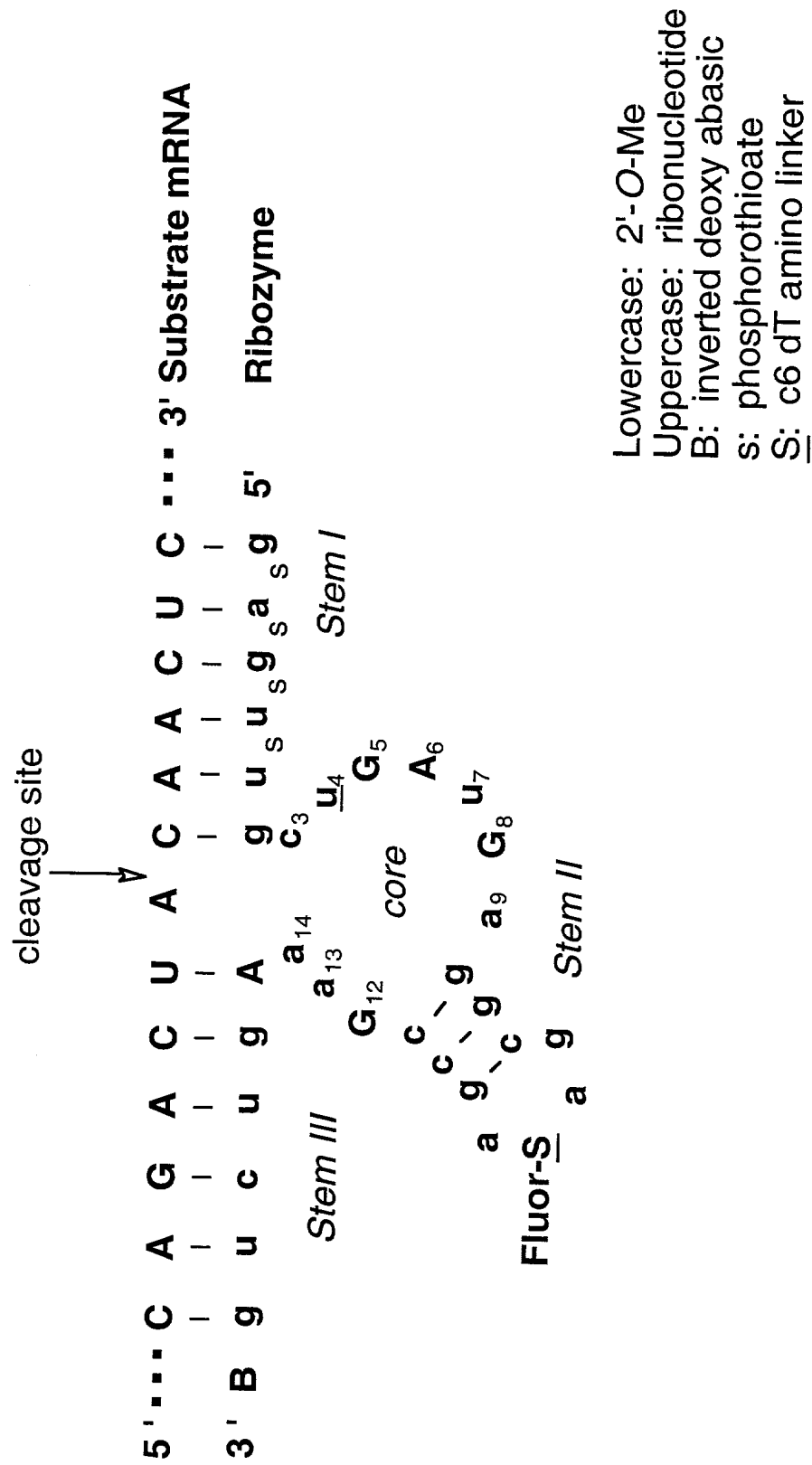
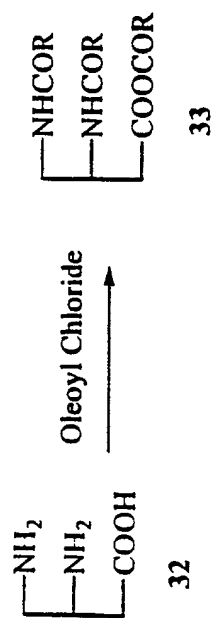


Figure 13

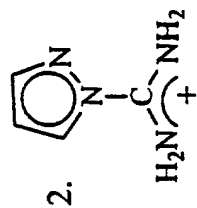
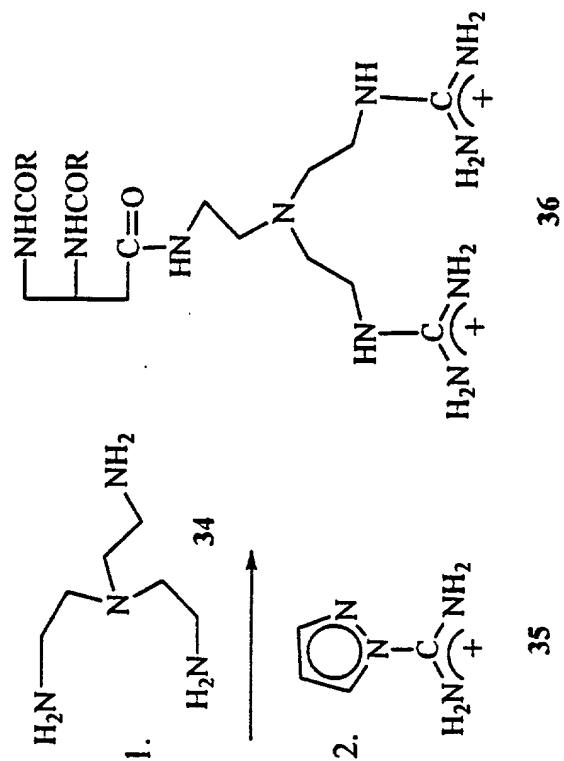
amide analogs



2,3-diaminopropionic acid

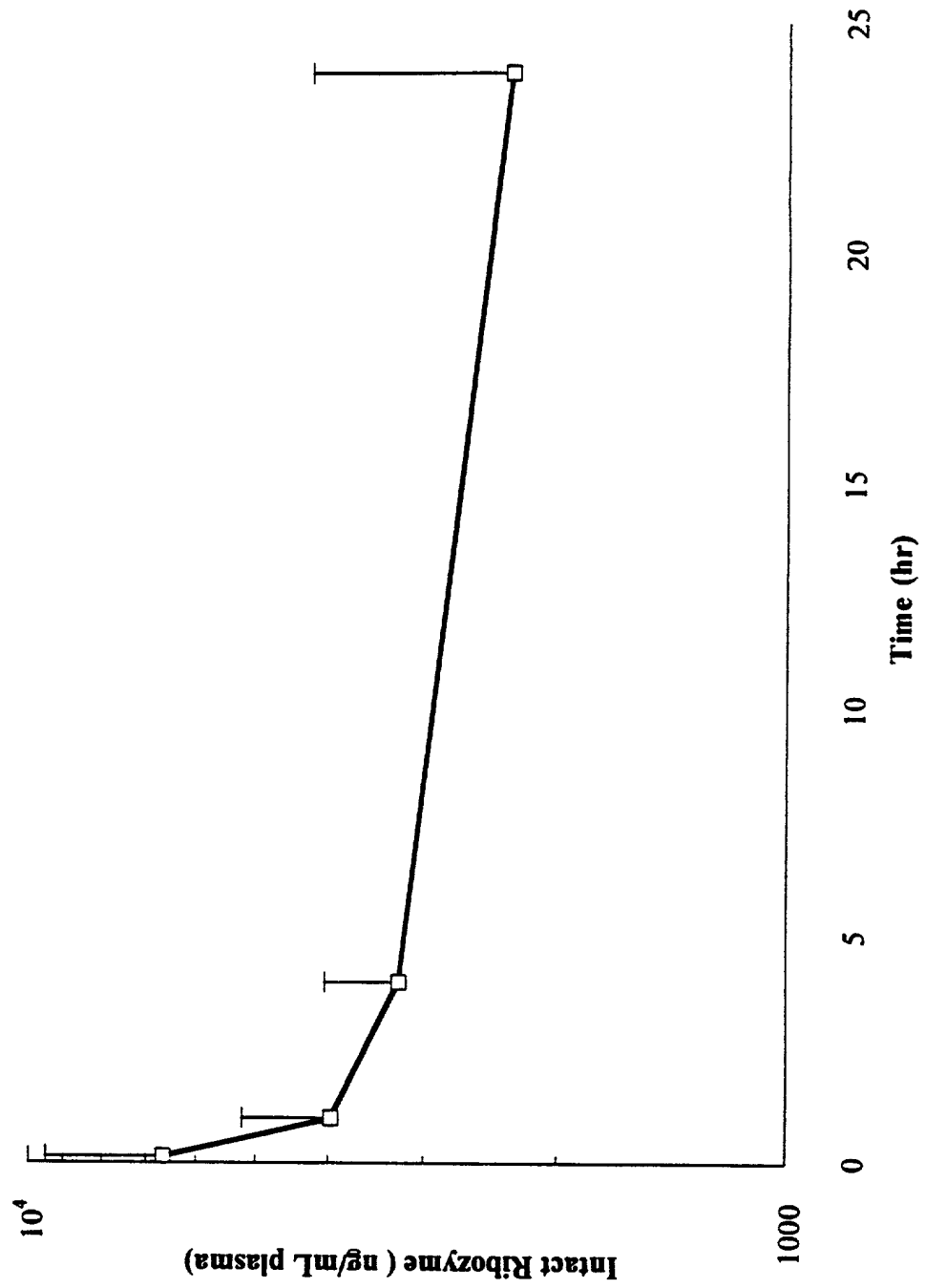
R = Oleyl (C<sub>18:1</sub>)

Figure 14

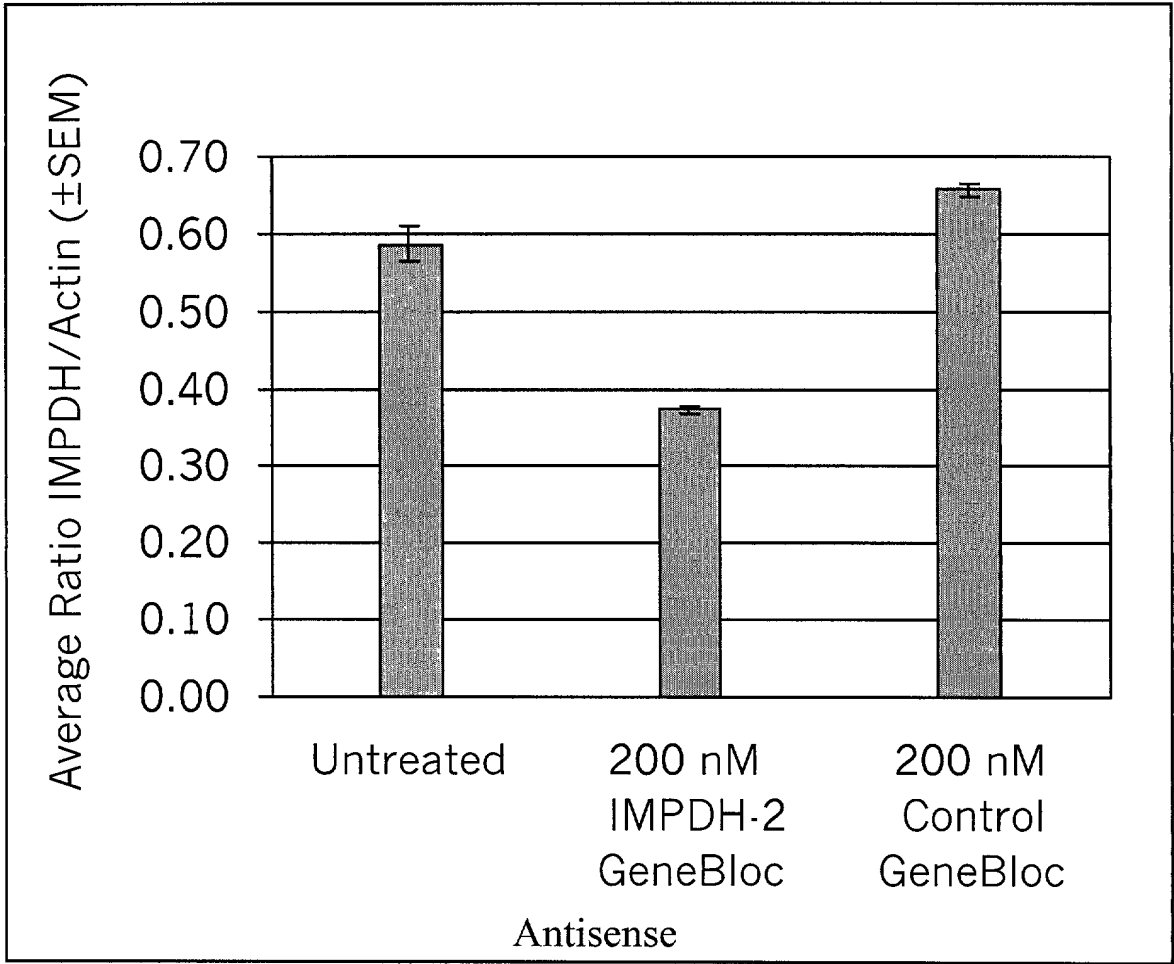


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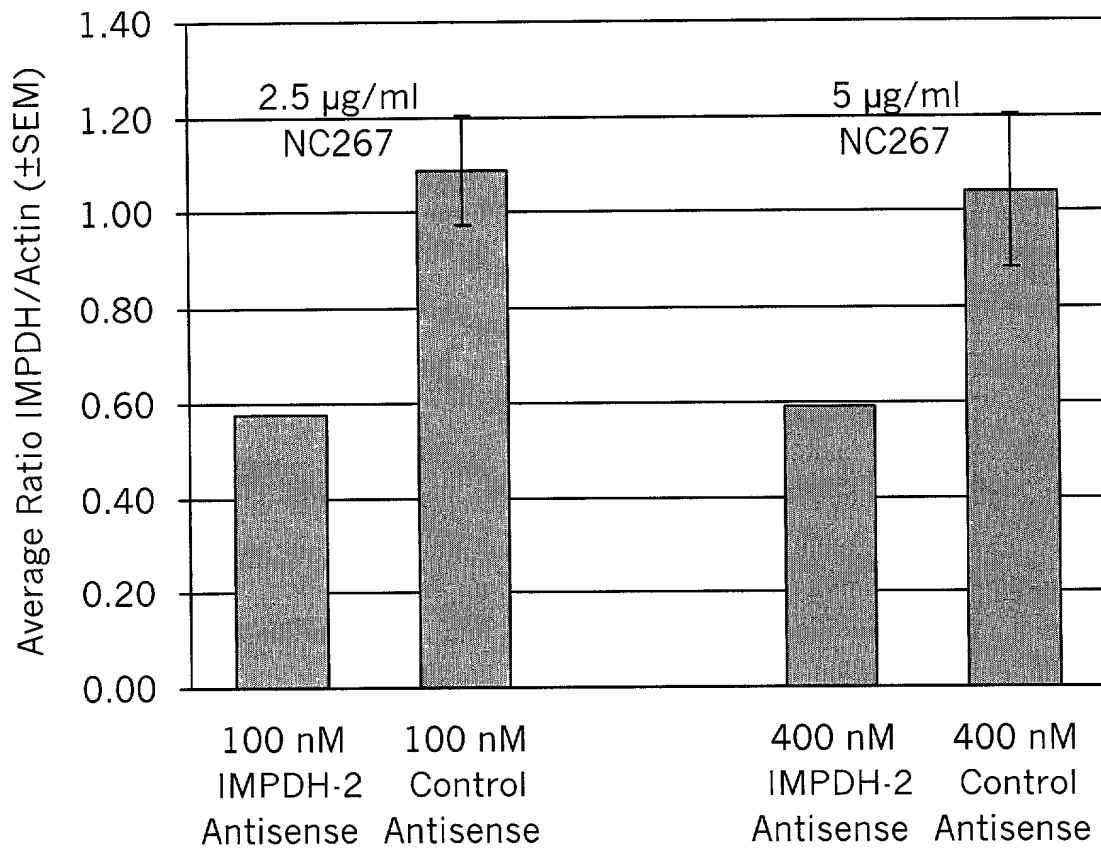
**Figure 15: Concentration of Intact Ribozyme after Intravenous Administration of EPC:CHOL:DOTAP:DSPE-PEG<sub>2000</sub> Liposome Encapsulated Ribozyme**



**Figure 16: Inhibition of IMPDH-2 mRNA Expression in Jurkat Cells  
Treated for 24 h with IMPDH antisense molecule + 5 µg/ml  
Formulation ID No. 345**



**Figure 17: Inhibition of IMPDH-2 mRNA Expression in Jurkat Cells Treated for 24 h with IMPDH Antisense molecules+ Formuation ID NO: 323**



**Figure 18: Inhibition of IMPDH-2 mRNA Expression in Jurkat Cells Treated for 24 h with IMPDH antisense molecules + Formulation ID NO: 333**

